

AMENDMENTS TO THE CLAIMS

1. (currently amended) A method for forming a gate structure for a semiconductor transistor, the method comprising:
forming a lower polysilicon region on a gate dielectric layer;
implanting said lower polysilicon region with a dopant at a first dopant concentration;
forming a conductive barrier layer upon said lower polysilicon region;
forming an upper polysilicon region upon said conductive barrier layer;
and
implanting said upper polysilicon region with dopant at a second dopant concentration, said second concentration being different than said first concentration.
2. (original) The method of claim 1, further comprising forming a silicide layer on said upper polysilicon region.
3. (original) The method of claim 1, wherein said conductive barrier is selected from the group of: tungsten nitride (WN), tantalum nitride (Ta₂N), titanium nitride (TiN), tungsten silicon nitride (WSiN), tantalum silicon nitride (TaSiN), aluminum titanium nitride (AlTiN), titanium silicide (TiSi), quantum conductive semi-insulating barriers, and combinations comprising at least one of the foregoing.
4. (original) The method of claim 1, wherein said lower polysilicon region comprises silicon germanium carbon (SiGeC).
5. (original) The method of claim 1, wherein said lower polysilicon region is doped at a concentration of about 1×10^{21} atoms/cm³, and said upper polysilicon region is doped at a concentration of about 3×10^{20} atoms/cm³.

6. (original) The method of claim 1, wherein said lower polysilicon region is formed by:

defining a polysilicon block on said gate dielectric layer;
forming a sacrificial layer over said gate dielectric layer and said polysilicon block;
planarizing said sacrificial layer down to the top of said polysilicon block;
and
recessing said polysilicon block below the top of the planarized sacrificial layer.

7. (new) The method of claim 1, wherein said upper polysilicon region is formed directly upon a top surface of said conductive barrier layer.

8. (new) The method of claim 1, wherein said second concentration is less than said first concentration.